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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,500	02/26/2002	Nobukazu Yogo	1232-4829	8696
27123	7590	03/10/2004	EXAMINER	
MORGAN & FINNEGAN, L.L.P.			SONG, MATTHEW J	
345 PARK AVENUE			ART UNIT	PAPER NUMBER
NEW YORK, NY 10154			1765	

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/085,500

Applicant(s)

YOGO ET AL.

Examiner

Matthew J Song

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 10-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in the paper filed on 2/2/2004 is acknowledged. The traversal is on the ground(s) that it would not be unduly burdensome for the Examiner to search the classification identified for all claimed inventions at least because of the relationships between the various invention groupings admitted by the Examiner. This is not found persuasive because a serious burden exists in the differing issues likely to arise during the prosecution of the different statutory classes of the invention.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 10-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the paper filed on 2/2/2004.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Oba (US 6,488,769) or 35 U.S.C. 102(b) as being anticipated by Ooba (JP 2000-191322), where US 6,488,769 is used as an accurate translation.

Oba discloses a method of producing a fluoride crystal comprising heating a crucible **204** adapted to accommodate a raw material of fluoride **205** and having an exhaust mechanism (Fig 4 and col 6, ln 15-35). Oba also discloses a crucible aperture is opened and heating is continued until the raw material is completely molten and after a degree of vacuum has been well stabilized, the molten fluoride is slowly cooled to be solidified, this reads on applicant's dehydrating step because the temperature is raised to a point at the fluoride melts which is inherently higher than the point at which water will evaporate and exhausting because a vacuum is inherently achieved by evacuating with the exhaust system. Oba also discloses a solid scavenger is added to a fluoride raw material and well mixed and the inside of the crucible is evacuated to vacuum with the crucible aperture being closed **S31** and the crucible is heated **S32** (col 6, ln 1 to col 7, ln 20). Oba also discloses the scavenger stays in the crucible in the raw material heating to promote the reaction well before the atmosphere is changed to discharge the

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reaction product and scavenger not used for the reaction after melting (col 3, ln 65 to col 4, ln 10).

Referring to claim 2, Oba discloses a scavenger reaction step in Fig 2 and the crucible aperture is closed during the refining step (col 6, ln 15-67). Oba also discloses exhausting after the reaction scavenger reaction step, this reads on applicants without performing the gas exhaust from the crucible by the exhaust mechanism.

Referring to claim 3, Oba discloses the scavenger not used for the reaction and reaction products were all discharged to the outside of the crucible after melting by changing the atmosphere (col 3, ln 15-40) and exhausting the chamber (col 3, ln 45-65 and Fig 2).

Referring to claim 4, Oba discloses the crucible has high sealing properties to the external atmosphere in a crystal growing step (col 7, ln 15-45), this reads on applicant's sealingly closing the crucible in the fusing, solidifying or crystal growing step. And an exhausting step is completed prior to the solidifying, fusing or crystal growing step (Fig 2 and Fig 3), this reads on applicants without performing the gas exhaust from the crucible.

Referring to claim 5, Oba discloses a crucible aperture opening and closing mechanism 207 is fixed to the heat insulating material for raising or lowering the crucible to close or open the aperture at the upper part of the crucible (col 6, ln 20-35), this aperture reads on applicant's openable/closable lid.

Referring to claim 6, Oba discloses the crucible aperture opening and closing mechanism 207 is fixed to the heat insulating material for raising or lowering the crucible to close or open the aperture at the upper part of the crucible (Fig 4 and col 6, ln 20-35), this reads on applicant's lid is demountable from an opening/closing mechanism because the lid 207 is separate from the

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heat insulating material used for opening/closing the aperture and inherently would be demountable.

5. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Ooba (JP 2000-191322), where a computer translation (CT) has been provided.

Oba discloses a method of producing a fluoride crystal comprising heating a crucible **204** adapted to accommodate a raw material of fluoride **205** and having an exhaust mechanism (Fig 4). Oba also discloses a crucible aperture is opened and heating is continued until the raw material is completely molten and after a degree of vacuum has been well stabilized, the molten fluoride is slowly cooled to be solidified, this reads on applicant's dehydrating step because the temperature is raised to a point at the fluoride melts which is inherently higher than the point at which water will evaporate and exhausting because a vacuum is inherently achieved by evacuating with the exhaust system. Oba also discloses a solid scavenger is added to a fluoride raw material and well mixed and the inside of the crucible is evacuated to vacuum with the crucible aperture being closed **S31** and the crucible is heated **S32** (CT [0041]-[0049]). Oba also discloses the scavenger stays in the crucible in the raw material heating to promote the reaction well before the atmosphere is changed to discharge the reaction product and scavenger not used for the reaction after melting (CT [0024]-[0025]).

Referring to claim 2, Oba discloses the a scavenger reaction step in Fig 2 and the crucible aperture is closed during the refining step and since gas is hard to be emitted to outdoor, a scavenger evaporating and cannot escape therefore the reaction advances efficiently (CT [0025])

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Referring to claim 3, Oba discloses a 2nd environment where a resultant and residual scavenger tend to escape by using an open condition (CT [0026]-[0027]).

Referring to claim 4, Oba discloses the crucible has high sealing properties to the external atmosphere in a crystal growing step (CT [0050]), this reads on applicant's sealingly closing the crucible in the fusing, solidifying or crystal growing step. And an exhausting step is completed prior to the solidifying, fusing or crystal growing step (Fig 2 and Fig 3), this reads on applicants without performing the gas exhaust from the crucible.

Referring to claim 5, Oba discloses a crucible aperture opening and closing mechanism 207 is fixed to the heat insulating material for raising or lowering the crucible to close or open the aperture at the upper part of the crucible (CT [0044]-[0046]), this aperture reads on applicant's openable/closable lid.

Referring to claim 6, Oba discloses the crucible aperture opening and closing mechanism 207 is fixed to the heat insulating material for raising or lowering the crucible to close or open the aperture at the upper part of the crucible (Fig 4), this reads on applicant's lid is demountable from an opening/closing mechanism because the lid 207 is separate from the heat insulating material used for opening/closing the aperture and inherently would be demountable.

6. Claim 1 and 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Oba (US 6,238,479) or rejected under 35 U.S.C. 102(b) as being anticipated by Ooba (JP 11-228292), where Oba (US 6,238,479) is used as an accurate translation.

Oba discloses a dehydration step, where a fluoride raw material is charge into a furnace and the fluoride raw material is heated while carrying on vacuum evacuation by maintaining the

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internal temperature of the furnace from 100-300°C (col 6, ln 5-30; col 4, ln 55 to col 5, ln 25), this reads on applicant's exhausting in the dehydration step. Oba also discloses an exhaust system (Figs 5-7 and col 6, ln 5 to col 20).

Referring to claim 3, Oba discloses an exhausting step after a scavenging reaction (Fig 3-4 and col 6, ln 40-65)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oba (US 6,488,769) or Ooba (JP 2000-191322), as applied to claims 1-6 above, and in view of Shibuya et al (US 5,766,342).

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Oba ('769) or Ooba ('322) teaches all of the limitations of claim 7, as discussed previously, except detecting a vacuum level of a process chamber and controlling the gas exhaust through the exhaust mechanism on the basis of the vacuum level detected.

In a method of controlling the pressure of a chamber, Shibuya et al teaches a reaction chamber 12 is provided with a pressure gauge so as to detect the pressure in the space and based on the value detected by the pressure gauge, a vacuum controller control an exhaust pump connected to the reaction chamber so that the space is maintained at a constant pressure (col 4, ln 1-15). It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Oba ('769) or Ooba ('322) by using the vacuum controlling means taught by Shibuya et al to control and maintain a constant pressure in a chamber, which is desirable.

9. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oba (US 6,488,769) or Ooba (JP 2000-191322).

Oba ('769) or Ooba ('322) teaches all of the limitations of claim 7, as discussed previously, except detecting a vacuum level of a process chamber and controlling the gas exhaust through the exhaust mechanism on the basis of the vacuum level detected.

The control of a vacuum level in a reaction chamber is well known in the art to be accomplished by using a pressure gauge and vacuum controller, as evidenced by Shibuya et al (US 5,766,342) above or Seki et al (US 5,129,986) below. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Oba ('769) or Ooba ('322) by automating the pressure control of Oba ('769) or Ooba ('322) by using a vacuum level

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detecting means to control the gas exhaust to control the vacuum level because automating a manual activity is held to be obvious (MPEP 2144.04).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Seki et al (US 5,129,986) teaches a chamber with an exhaust system, a pressure sensor and a central processing unit, which controls the internal pressure of the chamber in response to the pressure sensor (col 4, ln 50 to col 5, ln 10).

Kuwabara (US 2002/0162501) is a pre-grant publication of 10/086,074, which contains claims 2-8 and claim similar subject matter, as the instant application and would be subject to a double patenting rejection, except claims 2-8 have been withdrawn from consideration in application 10/086,074.

Oba (EP 0995820) is a 102 (b) equivalent to US 6,488,769.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J Song whose telephone number is 571-272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew J Song
Examiner
Art Unit 1765

MJS

NADINE G. NORTON
PRIMARY EXAMINER

